ABSTRACT OF THE DISCLOSURE

WAYSIDE LED SIGNAL FOR RAILROAD AND TRANSIT APPLICATIONS

A LED signal lamp that monitors, controls and tests the operational status of a plurality of LEDs. A separate current source is provided for each LED and resistors are in series between the current sources and LEDs. Analog-to-digital converters monitor the voltages at the resistors and LEDs and convert the voltages to digital form for a data processor. The data processor determines the junction temperature of each LED, controls the amount of current supplied to each LED and tests the operational status of each LED by matching its characteristics to a known diode curve. A pulse-width modulator provides further control of the amount of power supplied to the current sources. The data processor further controls a vital disconnect and a vital load. An energy storage/limiter circuit stores energy for the data processor during the absence of normal power input. Related methods of monitoring, controlling and testing such an LED system are also disclosed.